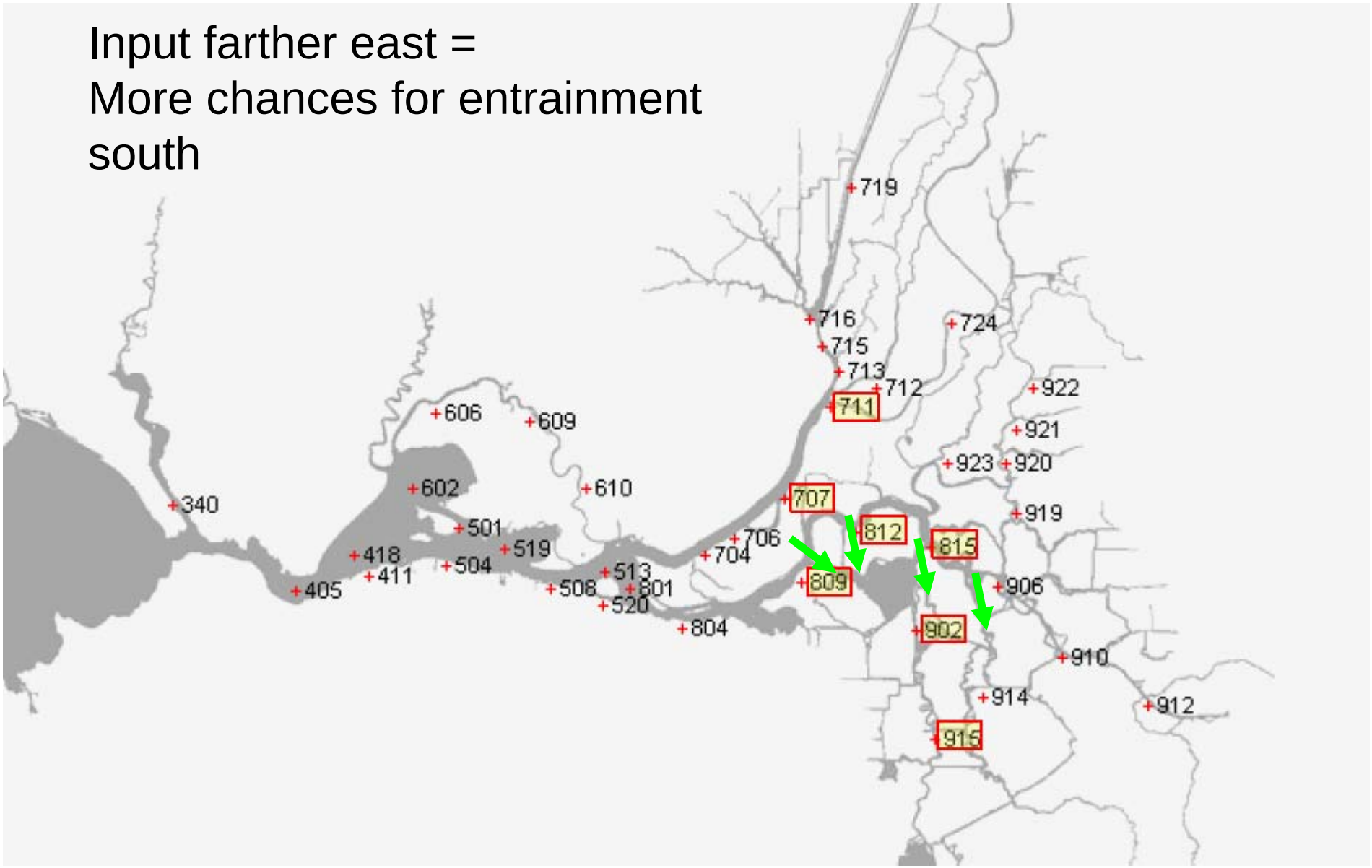
DSM-2 as a SWG tool

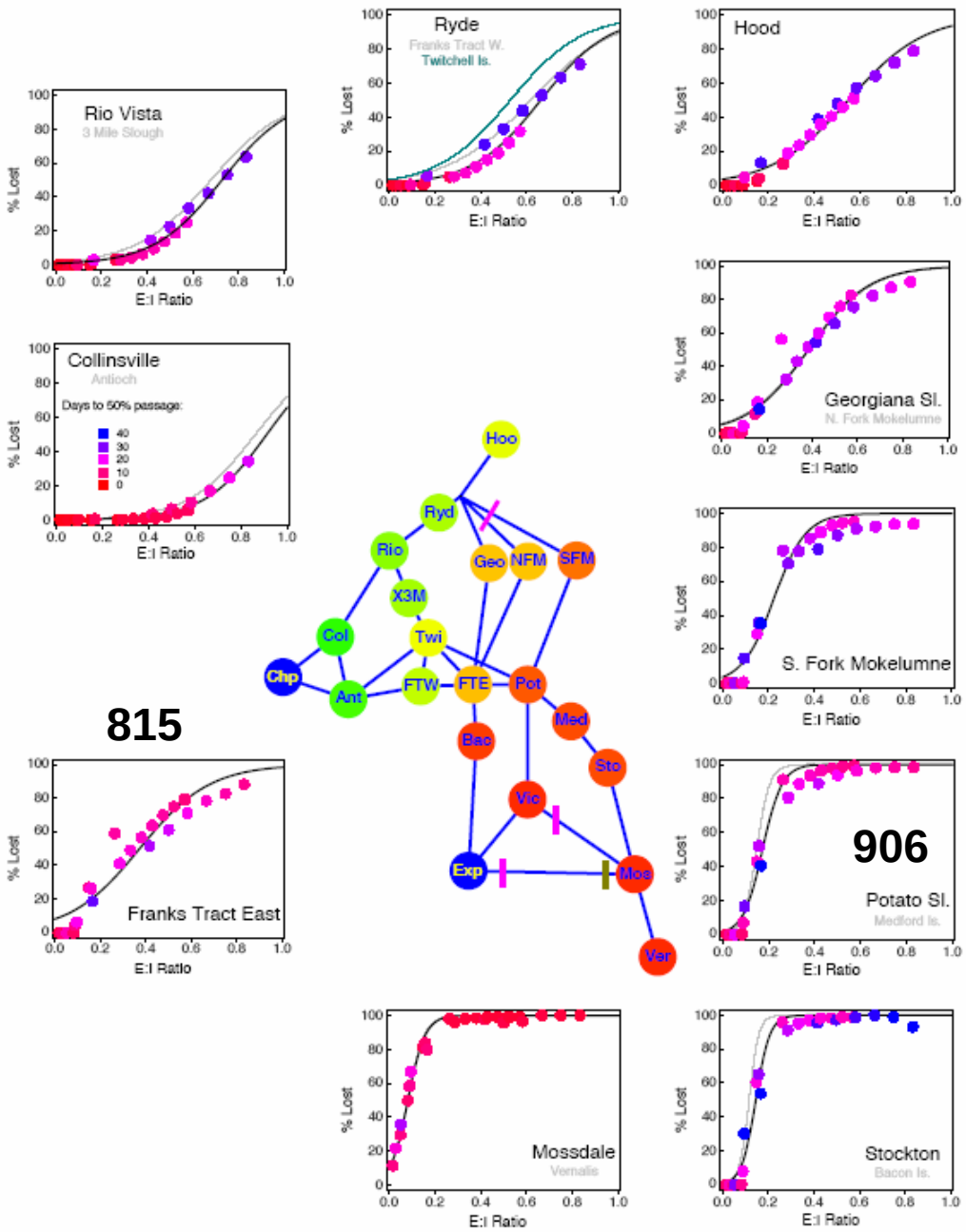
Matt Nobriga and Randy Baxter
3/23/2009

Data sources: Kimmerer and Nobriga (SFEWS 2008)
Baxter et al. (2009; effects analysis for longfin smelt CESA take permit)

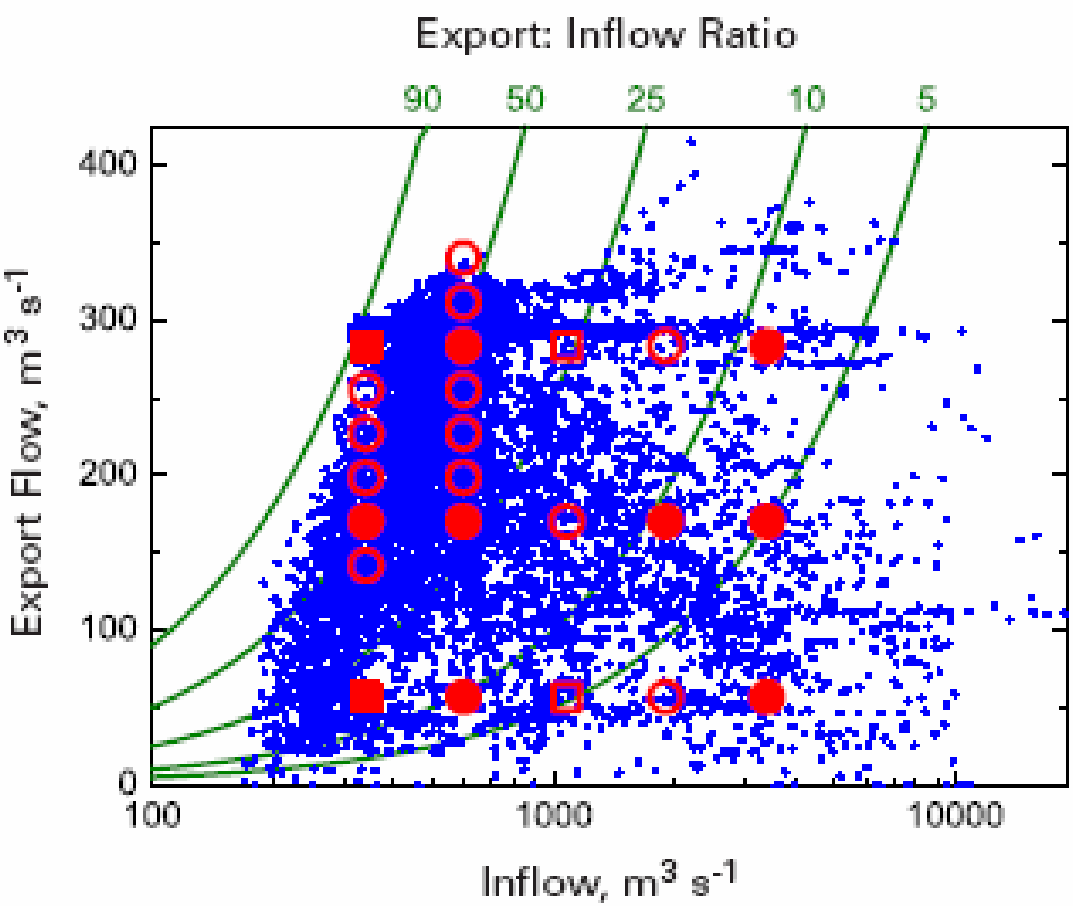
Input farther east =
More chances for entrainment south



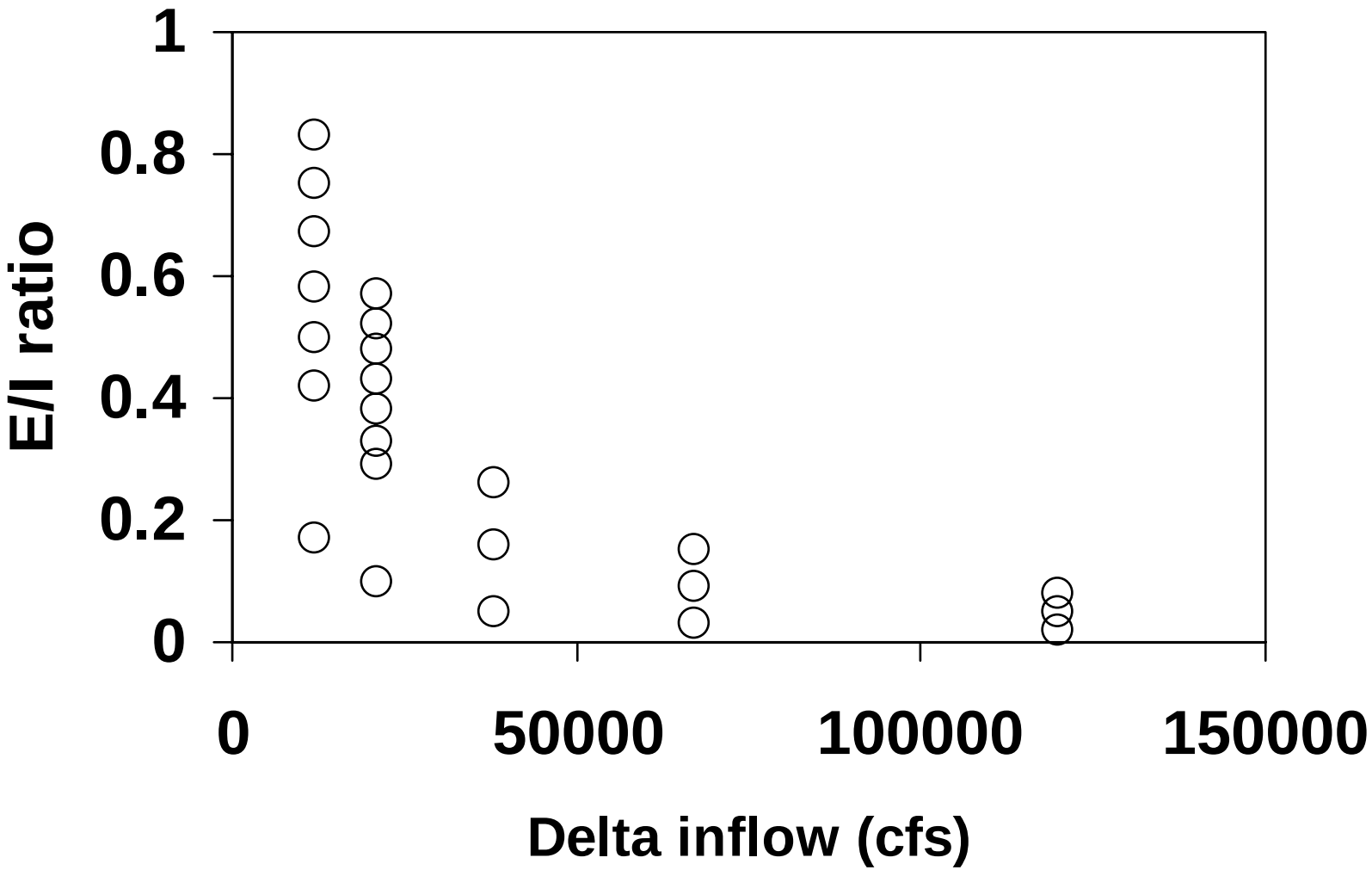
Input farther east = More chances for entrainment south



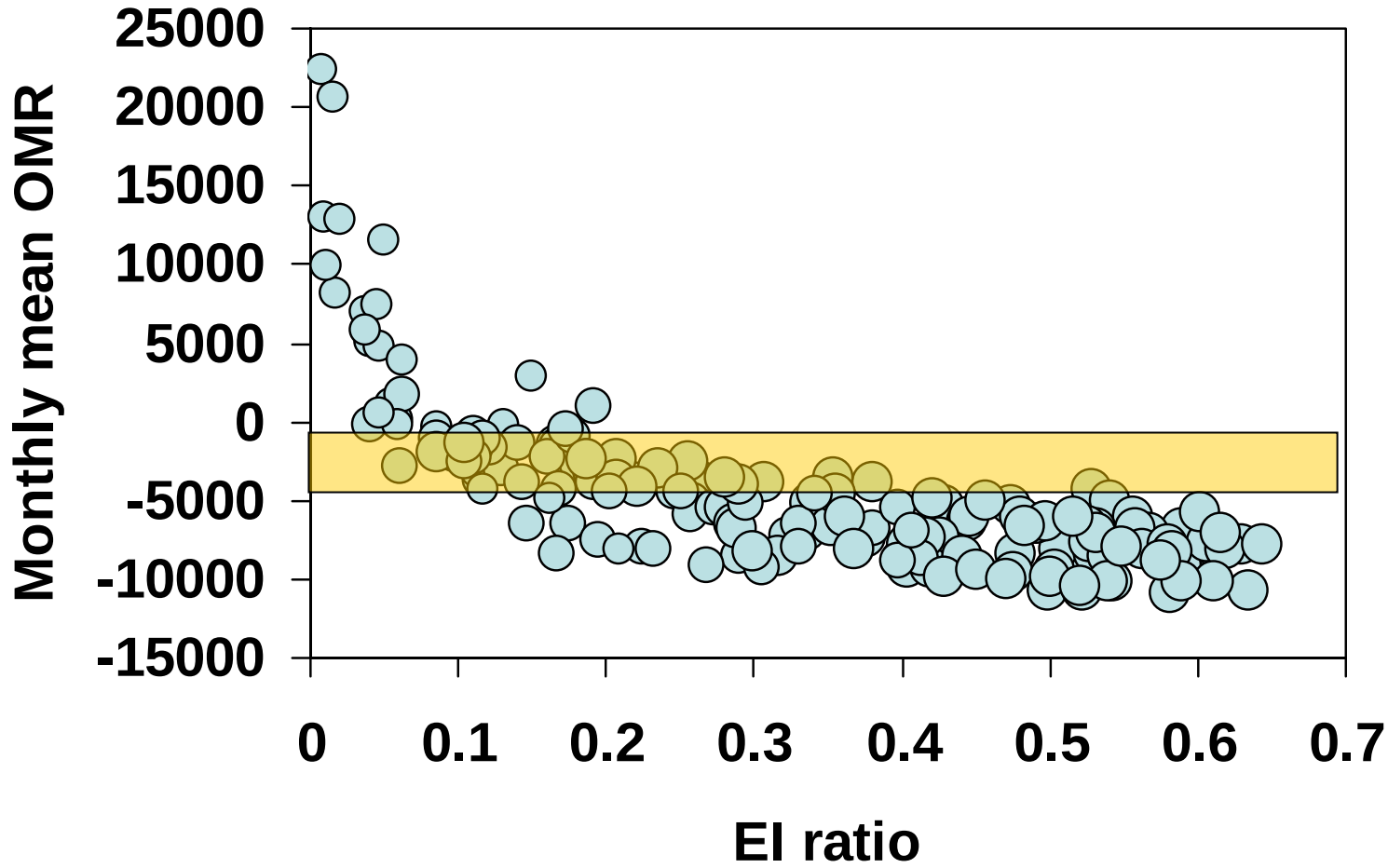
Most of the time there's low-ish outflow and high-ish exports



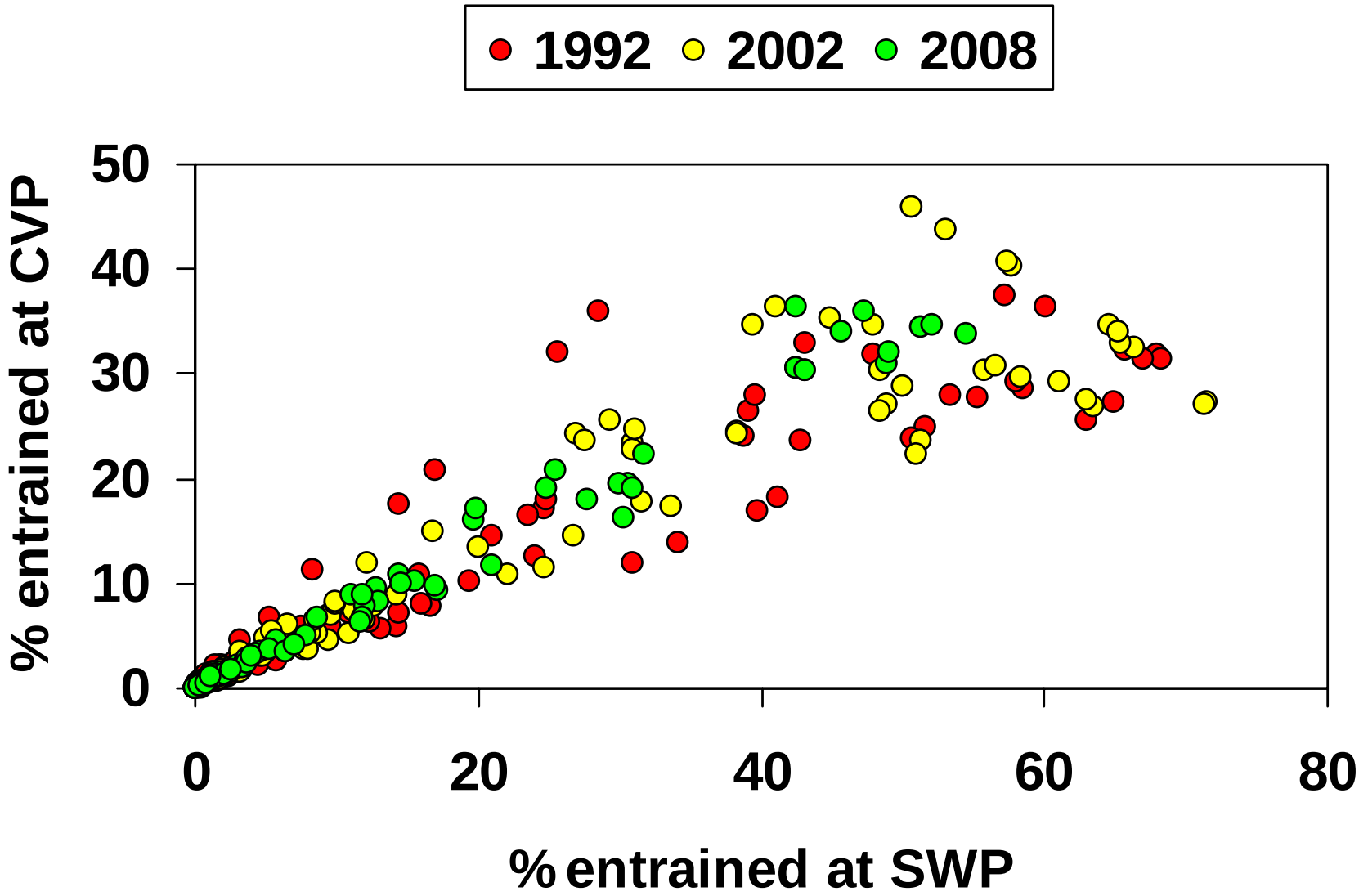
Flow constrains project effects



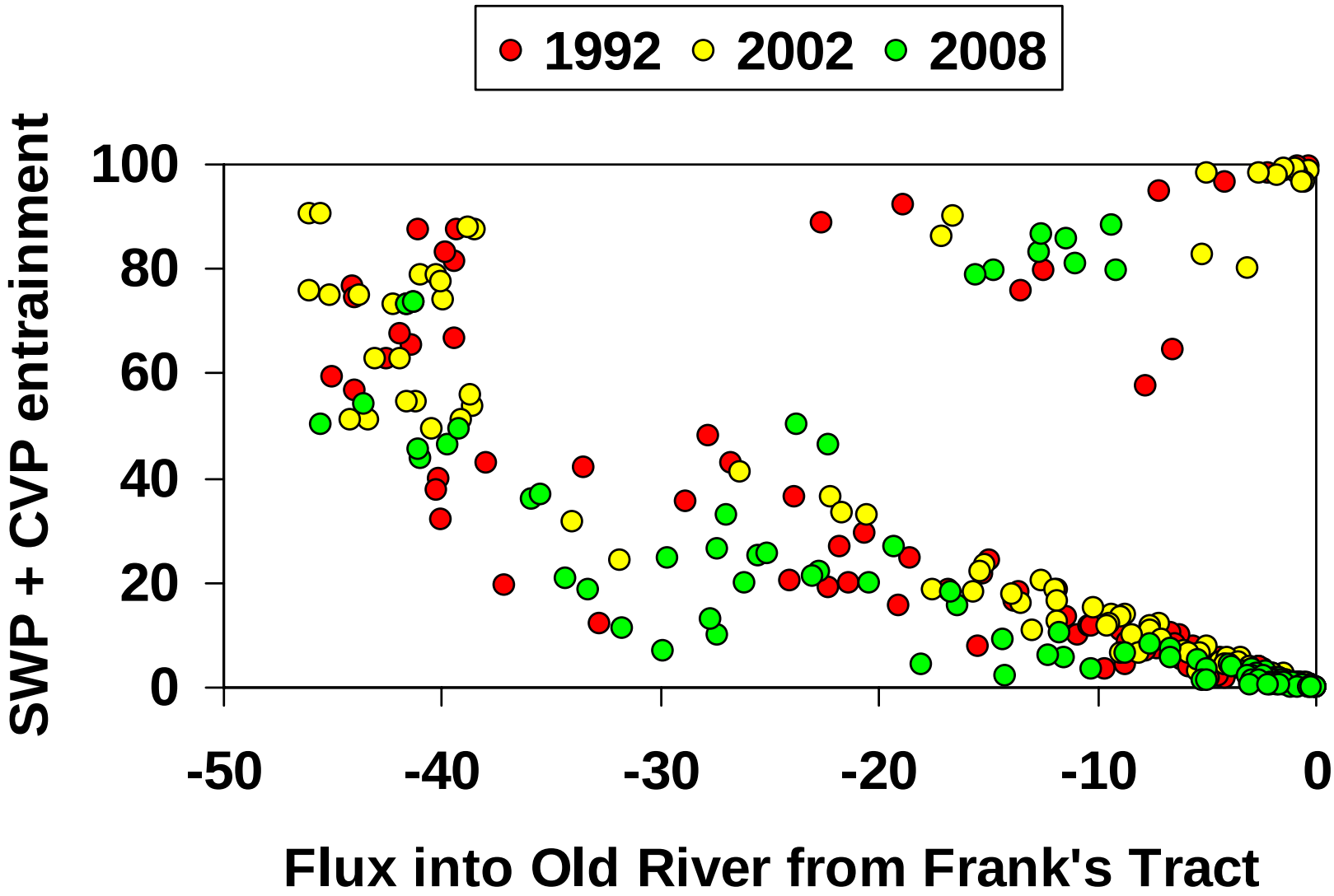
OMR is not uber-predictable based on EI ratio – even on a monthly time scale



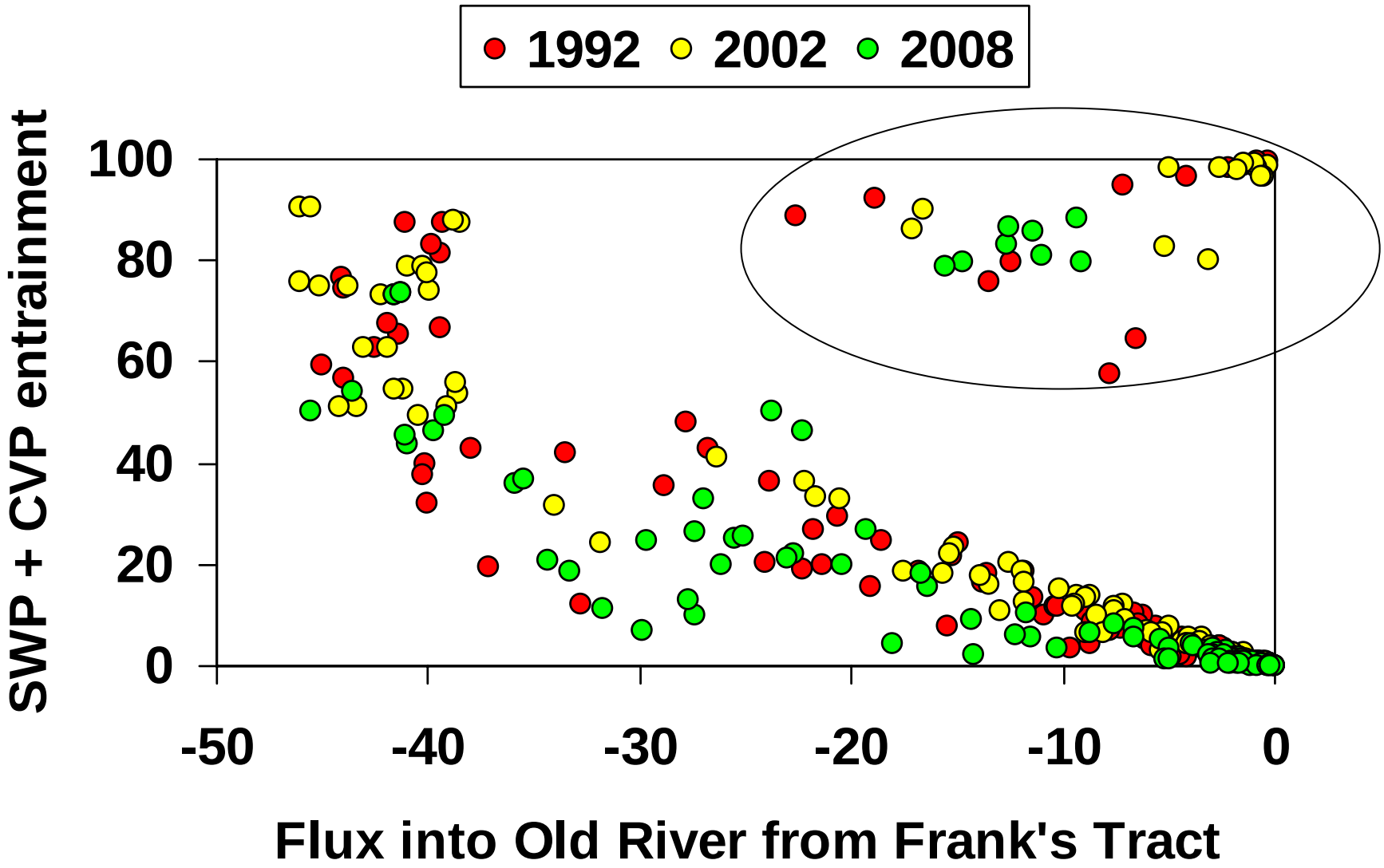
When you're f---ed, you're f---ed



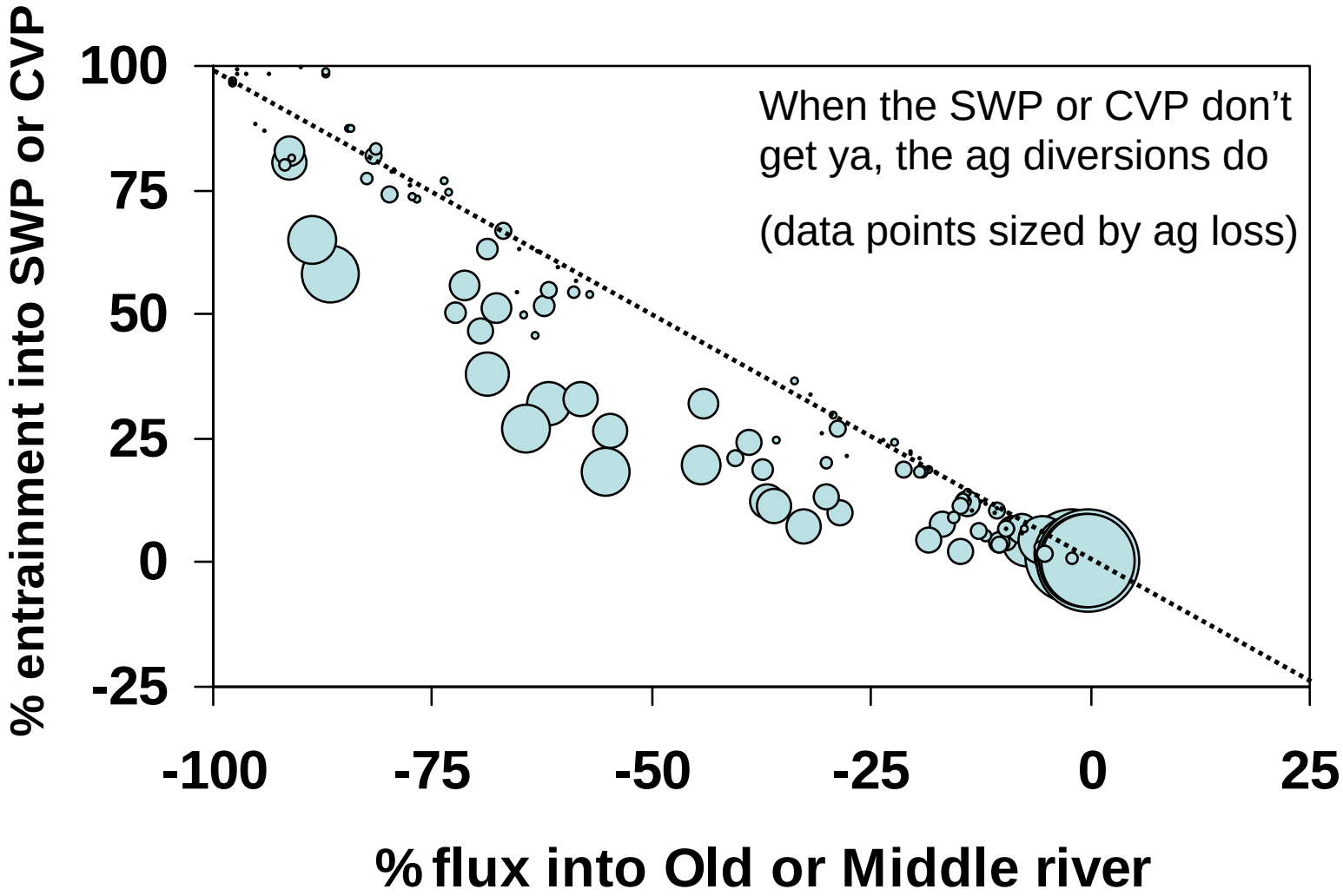
Fish need to stay out of Old River

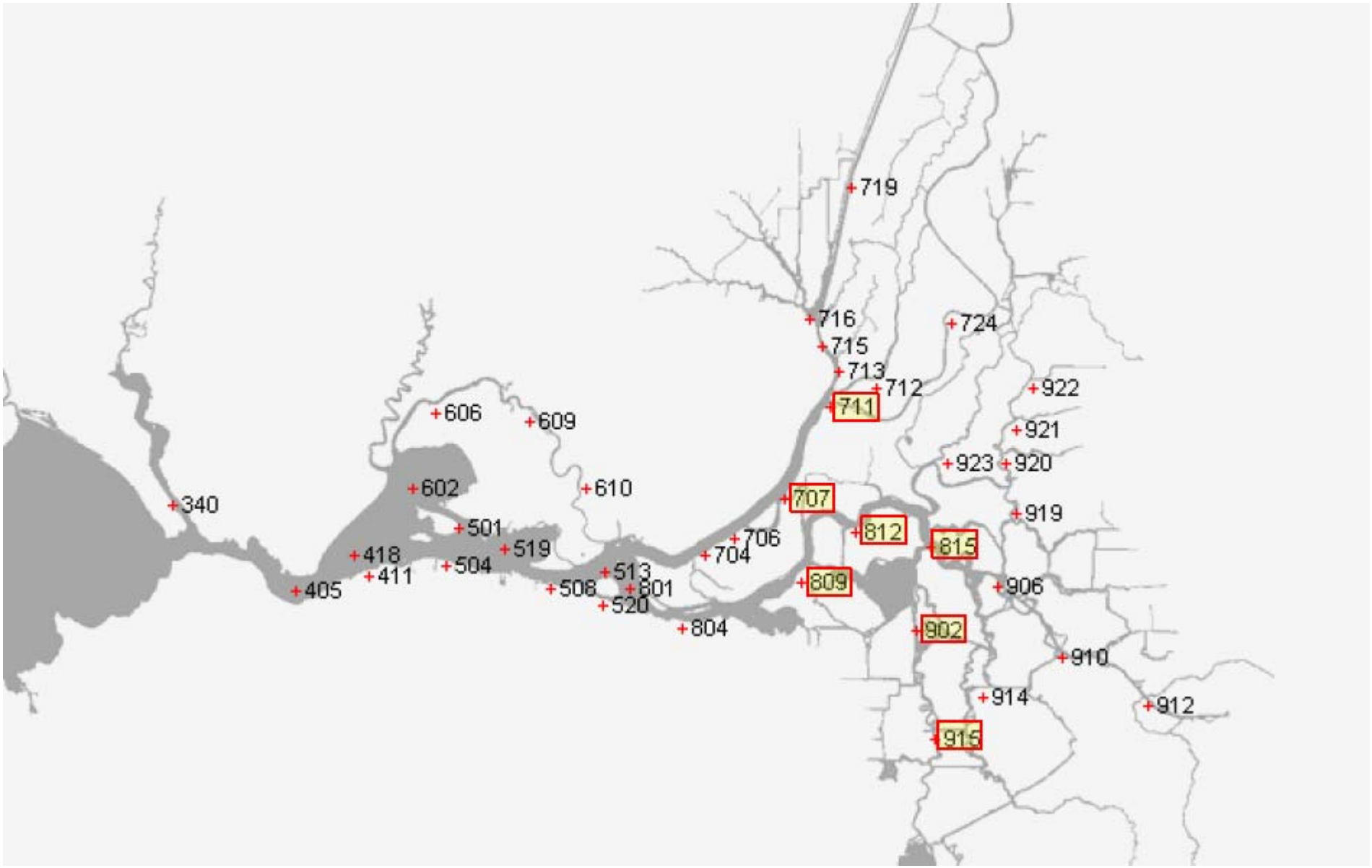


Fish need to stay out of Old River



Actually, fish need to stay out of the south Delta!




719
716
724
715
713
712
711
922
921
923
920
606
609
602
610
340
707
919
501
706
812
815
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513
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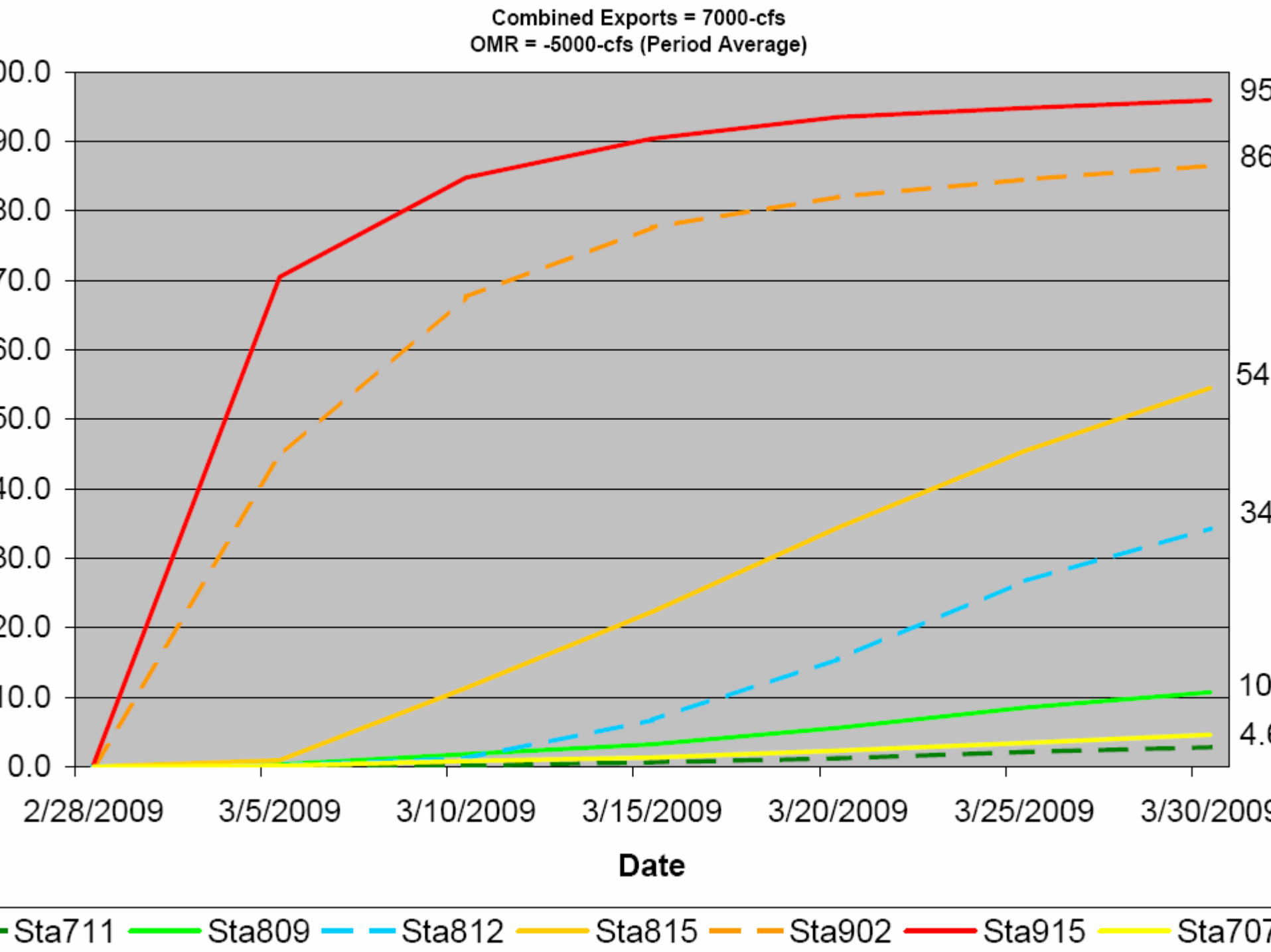
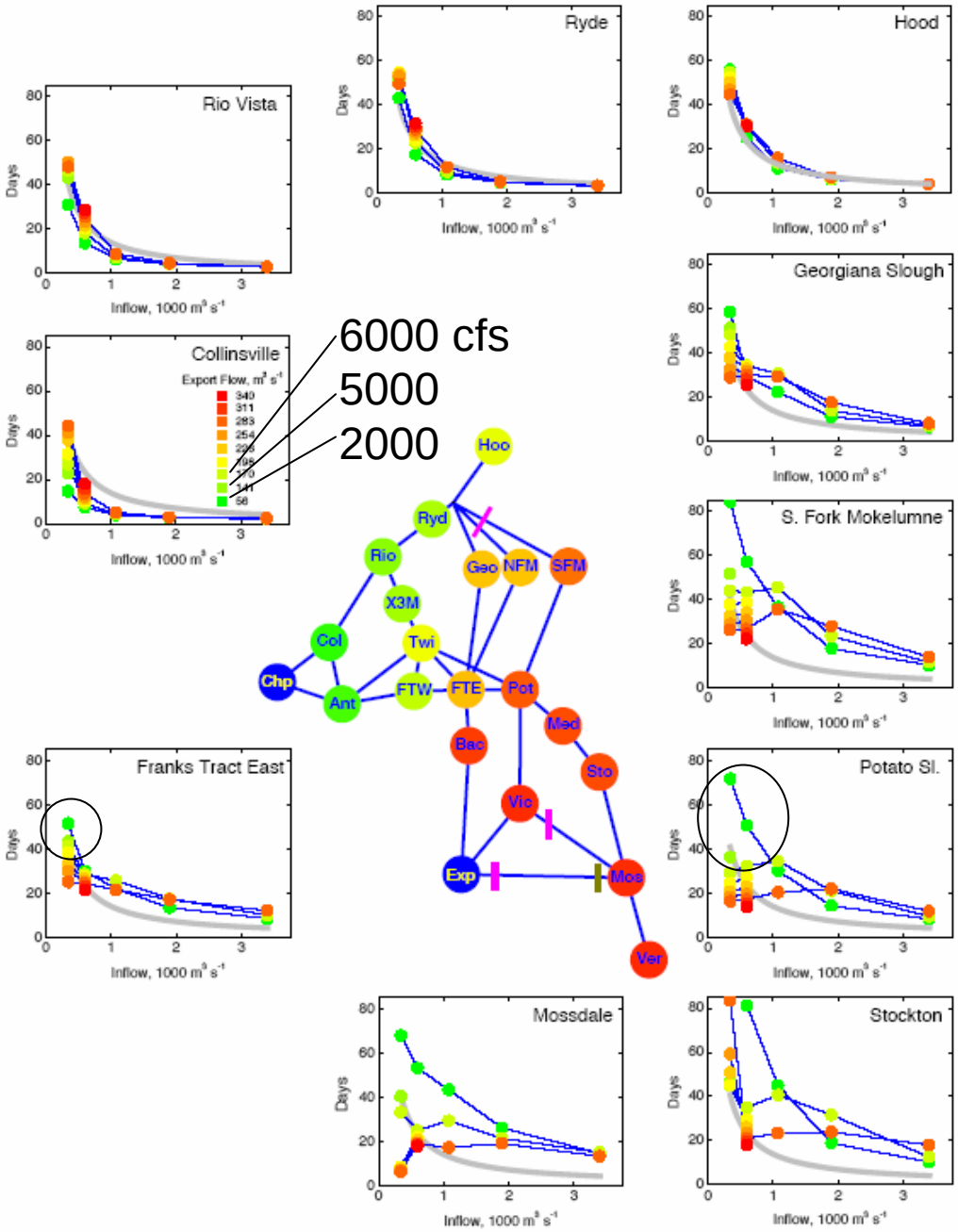
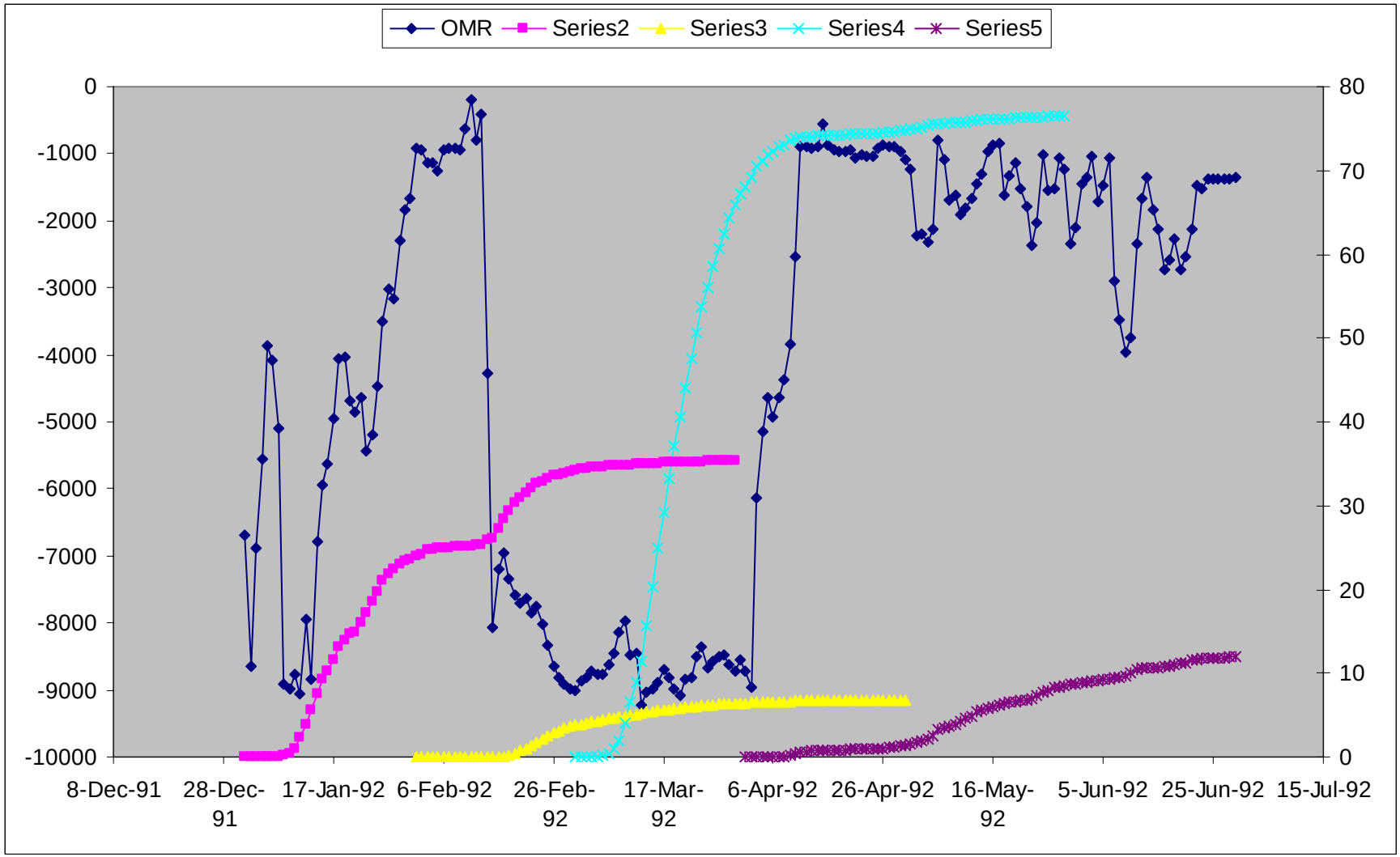
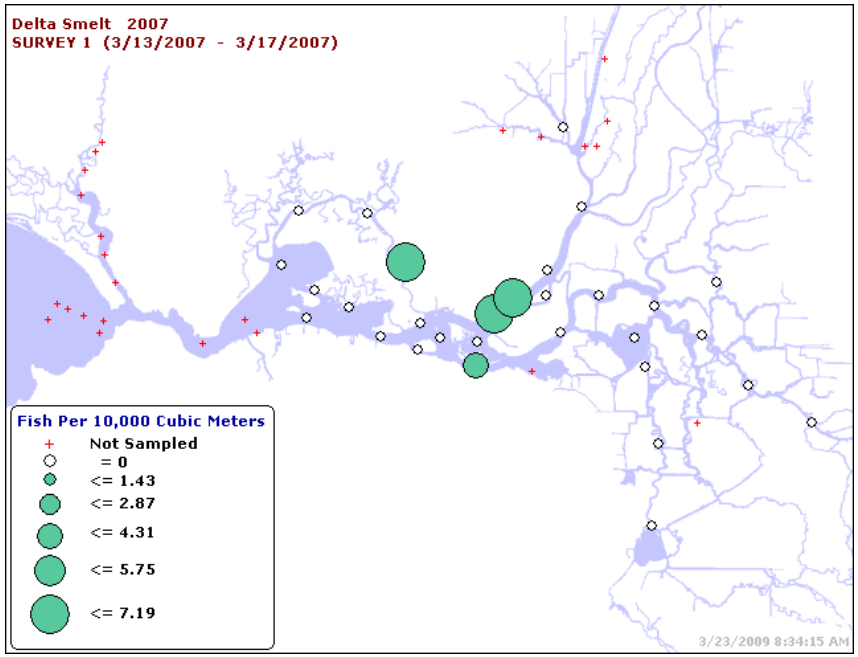
405
508
801
520
804
902
910
914
912
915

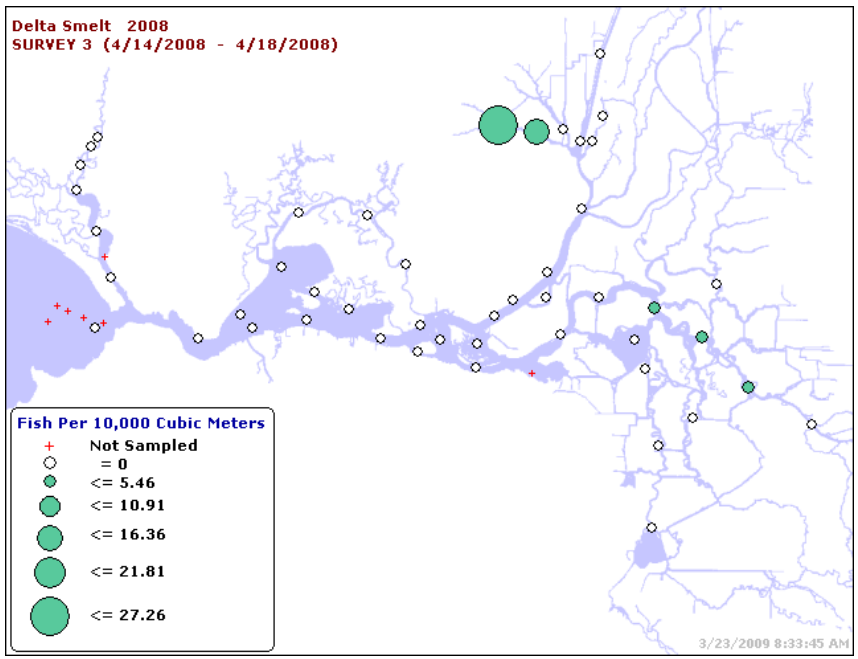

Combined Exports = 7000-cfs
OMR = -5000-cfs (Period Average)
00.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
95
86
54
34
10
4.6
2/28/2009
3/5/2009
3/10/2009
3/15/2009
3/20/2009
3/25/2009
3/30/2009
Date
Sta711
Sta809
Sta812
Sta815
Sta902
Sta915
Sta707

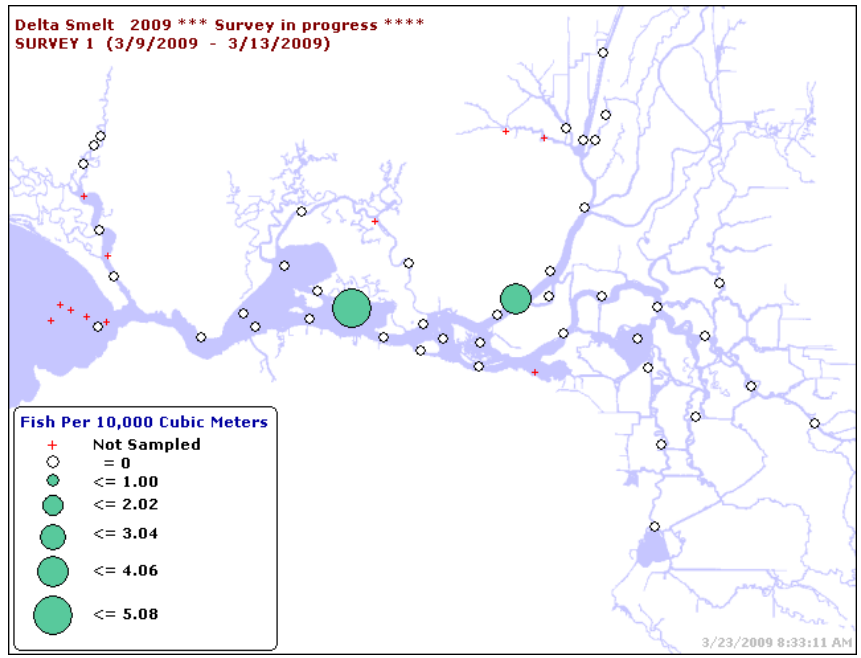

Rio Vista
Ryde
Hood
Collinsville
Georgiana Slough
S. Fork Mokelumne
Franks Tract East
Potato Sl.
Mossdale
Stockton
Days
Inflow, 1000 m³ s⁻¹
Export Flow, m³ s⁻¹
340
311
283
254
226
198
170
141
56
6000 cfs
5000
2000
Hoo
Ryd
Rio
Geo
NFM
SFM
X3M
Col
Twi
Chp
Ant
FTW
FTE
Pot
Mad
Bac
Sto
Vic
Exp
Mos
Ver

SJR (812) particle fates are sensitive to initial conditions of OMR

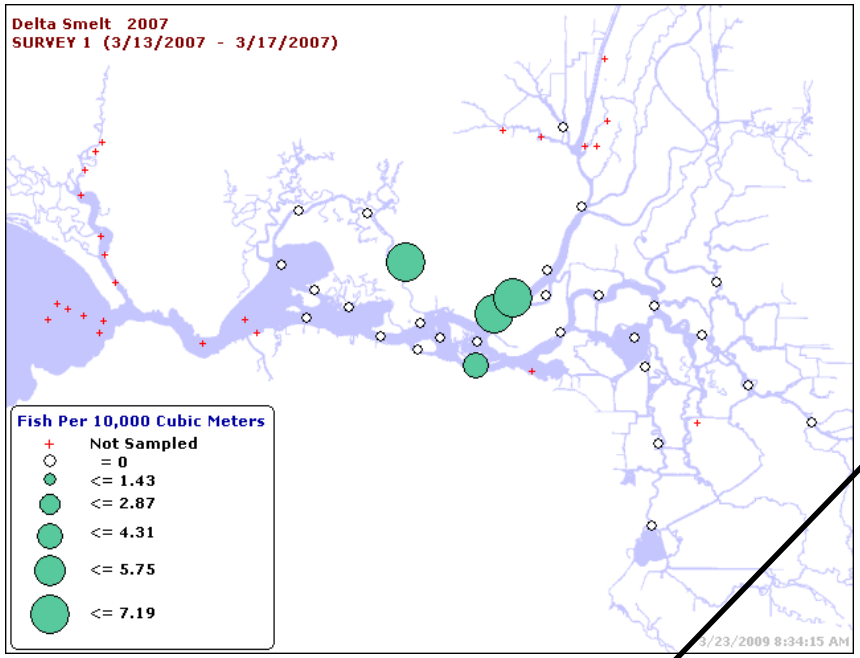



Delta Smelt 2007
SURVEY 1 (3/13/2007 - 3/17/2007)
Fish Per 10,000 Cubic Meters
Not Sampled
= 0
<= 1.43
<= 2.87
<= 4.31
<= 5.75
<= 7.19
3/23/2009 8:34:15 AM

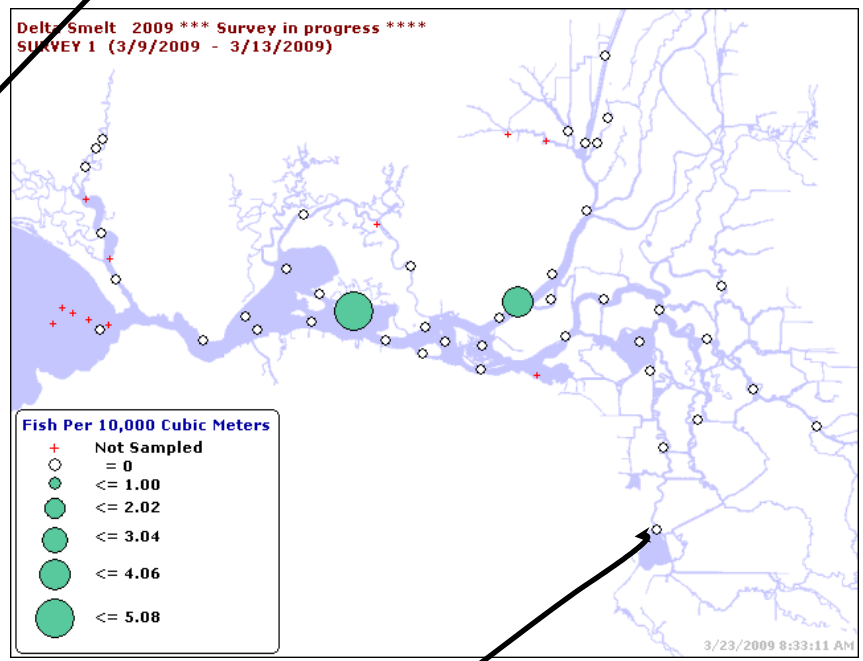

Delta Smelt 2008
SURVEY 3 (4/14/2008 - 4/18/2008)
Fish Per 10,000 Cubic Meters
Not Sampled
= 0
<= 5.46
<= 10.91
<= 16.36
<= 21.81
<= 27.26
3/23/2009 8:33:45 AM

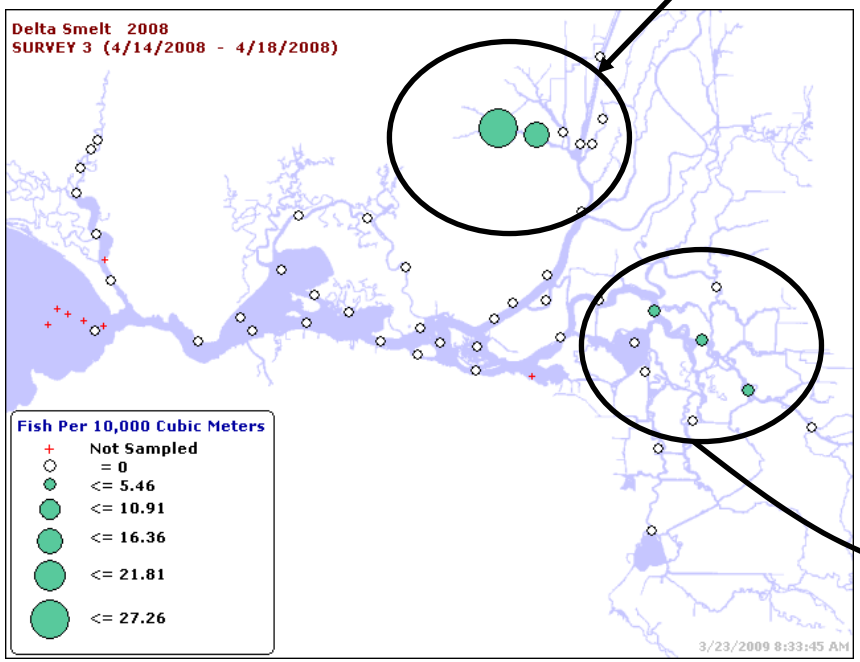

Delta Smelt 2009 *** Survey in progress ****
SURVEY 1 (3/9/2009 - 3/13/2009)
Fish Per 10,000 Cubic Meters
Not Sampled
= 0
<= 1.00
<= 2.02
<= 3.04
<= 4.06
<= 5.08
3/23/2009 8:33:11 AM

Beware the bubble plot…



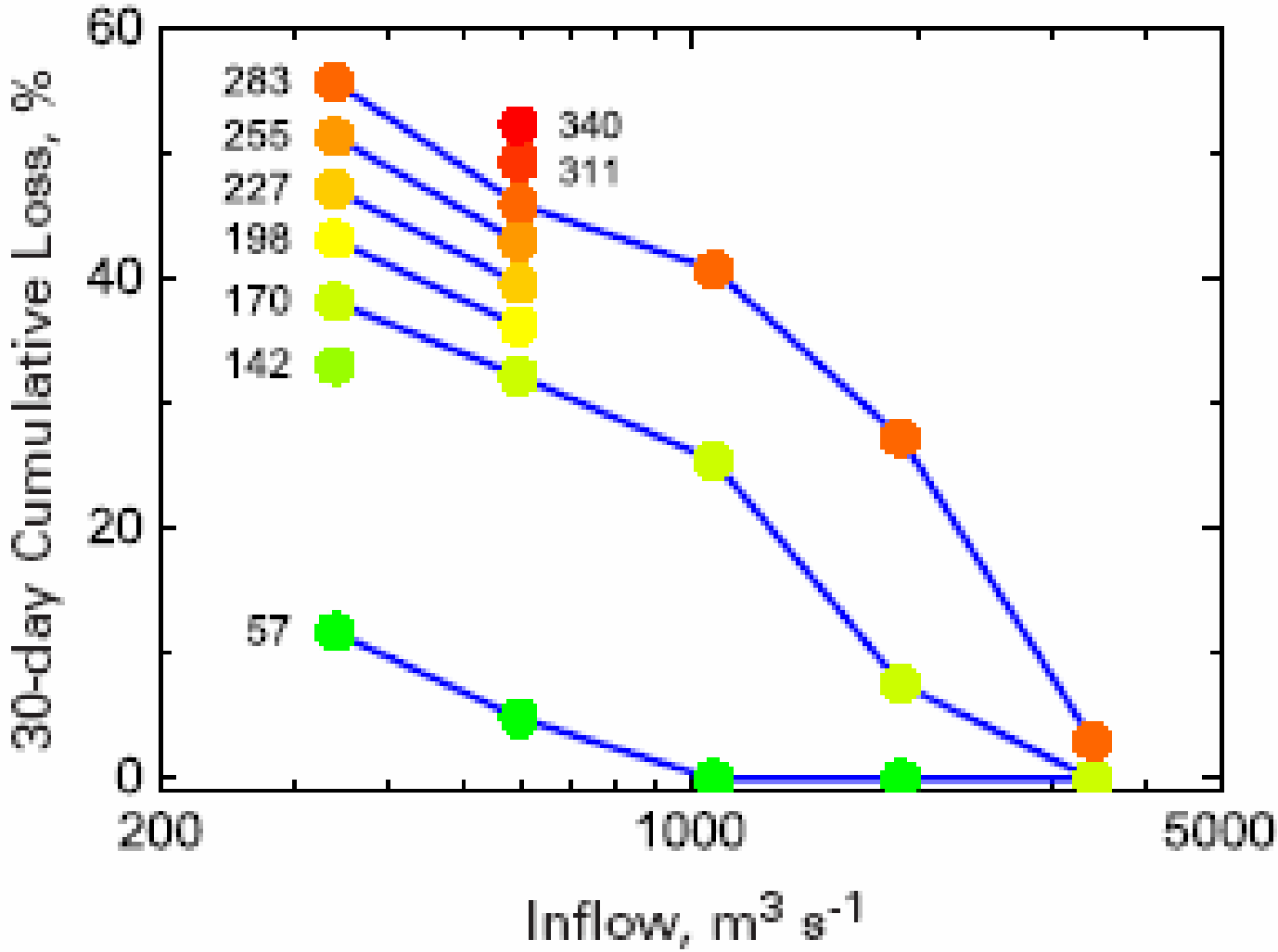
Not sure this survived NBA





No way this survives -5000 OMR

At low flow, exports have to be reduced a lot to greatly change larval delta smelt entrainment



Conclusions

- In dry years, ptm says stay out of south Delta channels
  - Emphasizes initial condition
  - Fish aren't particles
- Keep using one month planning horizon
  - Design flow *experiments* into ptm requests